



# **EPA Region 2 “Green Team”: Promoting “Green” Construction and Operation through Partnerships**

# We will cover...

- What is a Partnership Program?
- EPA Region 2 Focus: “Green” Construction and Operation
- EPA Region 2 “Green Team” Concept
- MOU Partners and Highlights

# What is a Partnership Program?

- EPA Partnership Programs are **voluntary programs** which address a wide variety of issues by working collaboratively with companies, organizations, communities and individuals.
- There are now more than 13,000 firms and other organizations participating in EPA Partnership Programs.



# EPA Partnership Programs

- EPA supports at least 45 different partnership programs in the following areas:
  - Agriculture
  - Air Quality
  - Energy Efficiency and Global Climate Change
  - Pollution Prevention
  - Product Labeling
  - Regulatory Innovation
  - Sector Programs
  - Technology
  - Transportation
  - Waste Management
  - Water

# Benefits of Becoming a Partner

- Benchmarking and Recognition
  - Record and communicate activities and accomplishments
- National Reach and Collaboration
  - Network with EPA and other organizations
- Services and Resources
  - Technical assistance and public recognition





# EPA Region 2 Focus:

## “Green” Construction and Operation

- Why are Green Buildings and Stadiums so Critical for the Environment?
- What can we do?
- EPA Region 2 can promote those national Partnership Programs that offer free assistance in going Green:
  - Design
  - Construction
  - Operation/Maintenance
- The Benefits:
  - Environmental
  - Economic
  - Corporate stewardship

# U.S. BUILDINGS IMPACTS ON RESOURCES

**39%** of total energy consumption

**71%** of electricity consumption

**39%** CO<sub>2</sub> emissions

**30%** of raw materials use

**30%** of waste output

**12%** of potable water consumption





**The  
Average  
Green  
Building  
Saves:**



**ENERGY  
SAVINGS**  
**30%**

**CO2  
SAVINGS**  
**35-50%**

**WATER  
USE  
SAVINGS**  
**35-50%**

**WASTE  
COST  
SAVINGS**  
**50-90%**



# What Can We Do?

“Reduce Stormwater Flow”

“Capture and Re-Use Stormwater”

Low Impact Development (LID)

- LID is an innovative stormwater management approach using small, cost-effective landscape features located at the lot level, known as Integrated Management Practices (IMPs).



# Stormwater Management Bio-retention Basins/Cells

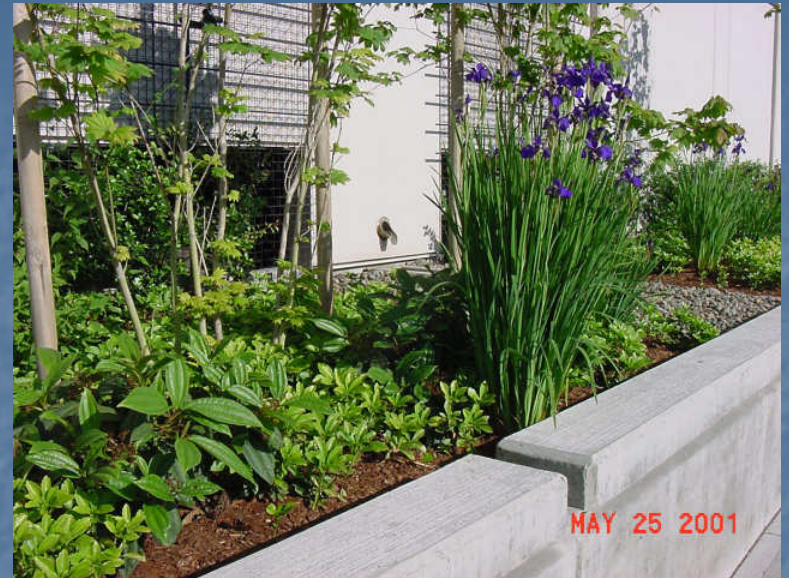




# Parking Lot Rain Gardens in Bloom

## Parking lot bioretention islands

- Reduces runoff volume
- Filters/infiltrates runoff
- Recharges ground water
- Aesthetics





# Stormwater Management Permeable/Porous Pavement



**Mets** used 65,000 ft<sup>2</sup> porous pavement; and 3,500 ft<sup>2</sup> drainage bed for commuter bus parking area; and will leave 25,000 ft<sup>2</sup> unpaved and planted for stormwater control.







New Giants/Jets Stadium uses recycled crushed stone  
Dust for porous medians



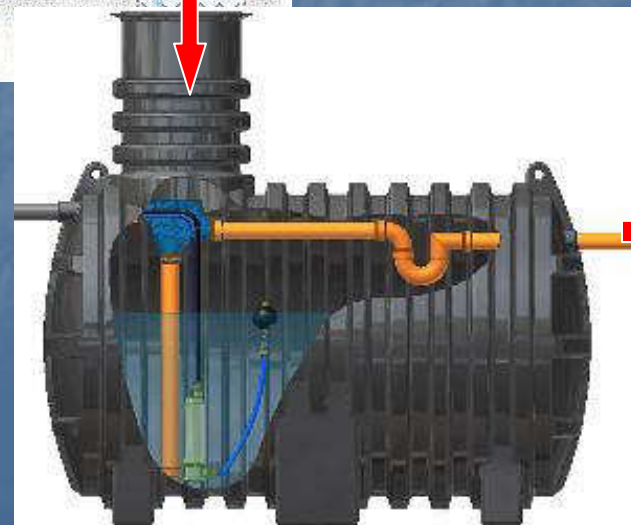
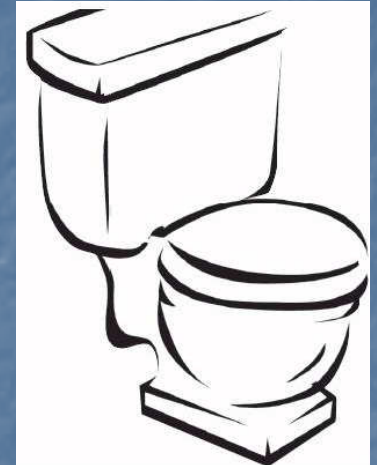
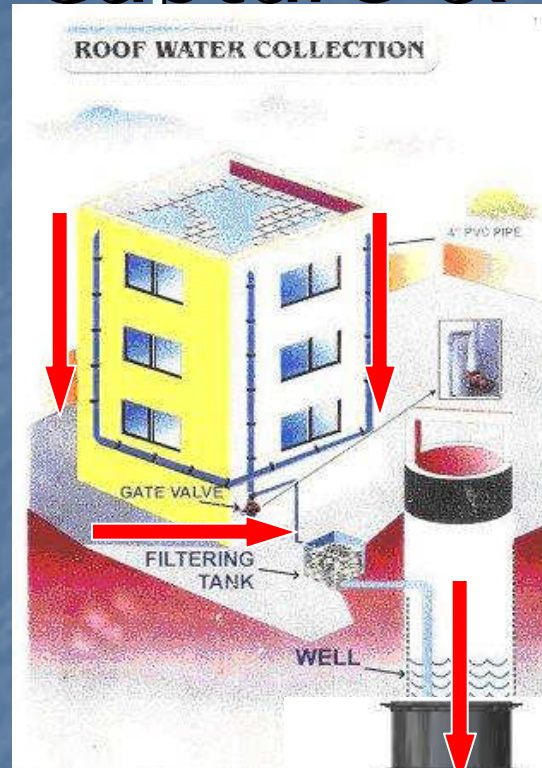


# What Can We Do?

## Stormwater Capture & Reuse

Destiny Mall (Syracuse, NY) has a 90,000 gal. underground tank to hold stormwater, which will be reused to flush toilets. Use of water and discharge to the sewage system will be decreased 50%.

The NY Mets will use captured rain water for grass watering needs.



# What Can We Do?

## Green Roofs

- Initial incremental cost is around \$10/ft<sup>2</sup> and coming down quickly
- Reduce storm-water runoff by as much as 80%
- Reduce city "heat Island effect"
- Lengthen roof life by two to three times
- Energy savings as much as 20%
- Reduces noise
- Neutralize acid rain effect
- Aesthetically pleasing & provides habitat



# Green Roofs



U.S. EPA Denver Office



IKEA Stoughton Store, MA



Green Roof on Atlanta's City Hall



NY METS Citi Field Green Roof



# Greenscapes Program Offers Assistance to Reduce:

- **Waste** generation by utilizing slow-growing, low maintenance plant materials.
- **Water** use - Incorporate compost into the soil to help improve water absorption and retention.
- **Pesticide** use - Implement an Integrated Pest Management (IPM) program.
- **Energy** - Strategically plant vegetation outside and around buildings to reduce indoor heating and cooling needs
- **Montclair State and St. John's Universities** are using GreenScapes Program Guidance under the MOU



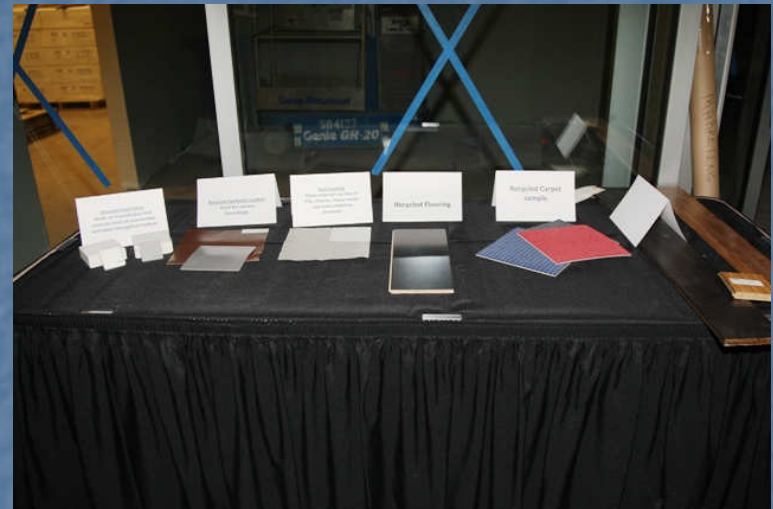
# What Can We Do?

## Re-Use Industrial Materials in Buildings

- Demand for construction materials continues to rise within the U.S.
  - 27% of existing U.S. buildings will be replaced in the next 20 years
  - In 2030, 50% of buildings will have been constructed after 2000
- Tremendous amounts of materials will be needed to meet worldwide demand
- Obtain LEED Credits

# Why Use Recycled Industrial Materials?

- Industrial materials are often much less expensive than virgin materials
- Better performance and durability





# What Can We Do?

## Design/Construction:

### Coal Combustion Product Applications

- CCPs include:
  - Fly ash, Bottom ash, Boiler slag and Flue gas desulfurization slag
- CCPs may be used in almost all construction applications
- Provides better performance (pozzolanic properties) than portland cement
- Widely available
- Being used by hundreds of contractors across the country
- Costs savings average 30-45%
- Significant energy and resource savings as well as greenhouse gas reductions
- CCP use qualifies for LEED Materials Reuse credit (5% = 1, 10% = 2)

# Green Concrete

CCP use qualifies for LEED  
Materials Reuse credit  
(5% = 1, 10% = 2)

Performance equal to  
or better than  
conventional concrete



**Destiny** using 30% CCP in concrete,  
~ 3,000 tons.

**Mets** will use ~ 1000 tons



# Cleaner Fuel

- **Ultra-low Sulfur Diesel Fuel**
  - Will be off-road standard by 2010
  - 99% sulfur removed
- **10 – 20 cents more per gallon**
  - Widely available now
- **Bio-Diesel**
- **5 – 9 % particulate reduction**
- **Increasing availability**
  - ACUA using B-20 in all trucks (>100)
  - Destiny Mall (Syracuse, NY)  
using B-100 in all equipment





# Diesel Retrofit

- Diesel Oxidation Catalyst (DOC)
- Diesel Particulate Filter (DPF)

Compare the results!



# Green Building Materials

- “BEES” Software helps designers select cost-effective, environmental preferable building products.
- Product evaluation uses lifecycle assessment approach specified in ISO 14040 series; includes environmental & economic performance.
  - Raw material acquisition
  - Manufacture
  - Transportation
  - Installation
  - Use
  - Recycling and waste management





# Water Services and Energy Demand

- Drinking water and wastewater services use 3-5% of US energy-56 billion kWh
- Equates to adding ~ 45 million tons of greenhouse gas to the atmosphere.
- Each 1000 gallons of cold water treated and delivered to your tap uses ~ 3,300Wh of electricity
- Energy costs and drinking water shortages continue to escalate, adding further strain for water utilities.

# Water Efficient Fixtures

Water-efficient toilets and faucets now carry EPA's WaterSense logo.

Reductions can total over 11,000 gallons per toilet/year.

Waterless or low-flow urinals and efficient landscape irrigation systems save even more.

The NY Mets and NY Giants/Jets will be using waterless urinals in their new stadiums saving 5MG/YR in each venue





# What Can We Do?

## Reduce Energy Demand

### “Join EPA’s Energy Star Program”

- **A voluntary public-private partnership (US EPA/DOE) with over 7,000 partners improving the energy efficiency of businesses, products, and homes through cost-effective measures**
- **A trusted national symbol for energy efficiency, recognized by 84% of all U.S. households**
- **For business partners, a proven strategy to achieve pollution prevention and climate stewardship through superior energy performance**
- **Avoided greenhouse gas emissions equivalent to those from 23 million cars, up from 20 million in 2004, while saving \$12 billion on energy bills.**



LEARN MORE AT  
[energystar.gov](http://energystar.gov)

# Energy Performance Rating

Is 10 MPG high or low for an automobile?



Fuel  
Efficiency  
MPG



Is 90 kBtu/SF/YR high or low for an office building?



Energy  
Efficiency  
Rating  
1 - 100



LEARN MORE AT  
[energystar.gov](http://energystar.gov)



# Eligible Space Types

Supermarkets

Offices

K-12 Schools

General, Courthouse,  
Bank Branch, Financial  
Center

Data Centers  
(9/09)

Hospitals

Hotels

Medical Offices

Warehouses

Residence Halls/  
Dormitories

Retail Space



LEARN MORE AT  
[energystar.gov](http://energystar.gov)

# Two Ways to Participate in Energy Star

## ■ Become a **Partner**

- send commitment letter
- measure & track energy performance using Energy Star tools where possible
- develop & implement an energy management plan
- energy efficiency outreach to staff & community
- support 10% improvement challenge
- highlight achievements with Energy Star recognition
- The NY Mets, Montclair State University, St. John's University, Cushman & Wakefield, Monmouth University and DestiNY USA are joining Energy Star under the EPA Green Construction and Operation MOU

## ■ Use Energy Star **Benchmarking** tools and earn the Energy Star **Plaque**

- use portfolio manager to calculate & improve building performance
- achieve a 75% rating certified by energy P.E.
- all commercial buildings in NYC will be benchmarked using Energy Star



LEARN MORE AT  
[energystar.gov](http://energystar.gov)



# What Can We Do?

## Design for Reduced Energy And Fossil Fuel Demand

- Good insulation
- Low-E glass
- Energy-efficient HVAC & mechanical systems
- Regenerative drives for elevators, cranes.
- Green lighting, CFLs
- Green Electronics
- Use and/or Generate Your Own Green Energy:
  - Buy renewable energy
  - Incorporate solar and/or wind power into design

# What Can We Do?

## Join the Green Power Partnership

- An EPA voluntary program to support and encourage organizations to purchase electricity generated from renewable resources.
- Partnering with EPA's Green Power Partnership is an easy and effective way to display environmental leadership while reducing environmental impacts.
- EPA provides Partners with information and recognition for their purchases.
- Members include Citigroup, Time Warner, GAP, JP Morgan, Pepsi, etc.





# What Can We Do? Generate Your Own Green Power

- Utilize **wind and solar power** on site with the latest commercially available wind vanes and turbines and enhanced solar panel systems.
- The cost of solar power will be significantly reduced in 2010 as the supply of crystalline silicon will be greater than the demand.
- There are new tax incentives planned for 2009
- Thin film solar sheets will be the future.
- Any excess power above your building needs can be sold back to the grid.

# Generating Green Energy SOLAR

NOTE: Atlantic City Convention Center will have the nation's largest solar array (2.4 mw) - enough power for almost 300 homes

NY Giants/Jets are planning for solar array  
At the New Meadowlands Stadium Complex



346 KW

1.1 MW





# Green Energy

## WIND

Destiny Mall: Vertical Axis Turbine light poles yield up to 84,000 kwhs.



Kettle Foods, WI – Each turbine generates 28,000 kwhs/yr.

Atlantic City Sewage Plant Wind Farm – 2.5 MW



Wind Farm Picture Gallery

# What Can We Do?

## Reduce Waste Generation & Increase Recycling

### “Join WasteWise”

- WasteWise:
  - ***free, voluntary, EPA program*** through which organizations eliminate costly municipal solid waste benefiting their bottom line and the environment
  - ***flexible program*** that allows partners to design their own waste reduction programs and goals
  - ***Food waste composting*** support also provided
  - ***provides free technical assistance*** to meet the mandatory solid waste recycling laws in New York and New Jersey
  - ***publicity and recognition*** to organizations that officially enroll and report results











# Electronic Product Environmental Assessment Tool

Green Electronics Made Easy

What Can We Do?

Buy and Recycle Green Electronics

- Environmental Performance Categories:
  - Environmentally Sensitive Materials
  - Design for End of Life
  - Product Longevity/Life Cycle Extension
  - Energy Conservation
  - End of Life Management
  - Corporate Performance
  - Packaging
- Three performance tiers:





# What Can We Do?

## Use Transportation Carriers Who Care About the Environment

### Smartway Transport Partnership

- Voluntary partnership between EPA and the freight industry
  - Increase energy efficiency and energy security
  - Reduce air pollution and greenhouse gases
- Carriers provide the majority of reductions
- Shippers partner with Smartway carriers



# **EPA Region 2**

## **“Green Team” Concept**

- **Agency-wide Bundling of Green and Sustainable Programs**
- **Utilizes the Memorandum of Understanding (MOU) to Formalize the Client’s Commitment to Sustainability and Going Green**
- **Provides a Framework for Measuring, Tracking and Reporting Environmental Benefits**
- **Business Model Approach That is Tailored to Client’s Needs and Interests**
- **Provides One-Stop Customer Service for All EPA Green and Sustainable Programs including State Efforts**



# EPA Region 2

## "Green Team" Concept (continued)

- **Establish a Sales Force** - Representatives must have a working knowledge of the various Partnership Programs
- **Sales Force Mantra** - Enlist motivated volunteers who are willing to meet with prospective clients and have a personal interest in selling green construction and operation items for ALL EPA Programs
- **Sales Presentation Approach tailored to Client** – Ensure that topics are tailored to the type of building and the current construction/operation status and examples are tailored to the client's sector.
- **Strategically Focus on Wholesale Approach** – When Possible, Initiate contact first with corporate trade organizations, councils and workgroups, then follow up with interested parties
- **Region 2 Green Construction and Operation Team** - Our team follows a simple rule laid down by the wise old fight trainer Mickey in Rocky II, who said "*THERE AINT NO CANT*"

# EPA Region 2 “Green Team” Approach to Partnership

- EPA and Company arrange a meeting(s) usually at the company's office
- EPA and Company agree to proceed with Environmental Programs Selected by the Company
- EPA and Company jointly develop MOU
- Formal Signing Ceremony, Press Conference, Press Release, Awards, etc.
- No Penalty for Missing a Target – Missed targets are considered opportunities for improvement and removing roadblocks to future success





## Region 2

Serving New Jersey, New York, Puerto Rico, US Virgin Islands and 7 Tribal Nations

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## The "Green Team"

### Promoting Green Construction & Operations

The environmental impacts of major development projects – shopping malls, sports stadiums, campus expansions, and the like -- don't end with construction. From design to construction to operation and maintenance and all the way through to demolition, a development can use tremendous amounts of energy and natural resources, while generating large quantities of waste. Buildings, through the sheer amount of power they use, are responsible for some 40 percent of the nation's energy consumption and 40 percent of its carbon dioxide emissions. For these reasons, EPA Region 2 forms partnerships with various organizations to reduce the environmental impacts of their projects, which in turn, can reduce construction, operation and maintenance costs.

EPA Region 2 has assembled a team of experts -- known as the Green Team -- that helps developers incorporate more sustainable construction, operation and maintenance practices into their projects through voluntary agreements called memorandums of understanding (MOU's).

The Green Team tailors information for each project on the technologies and practices that can help project sponsors:

- Improve energy and water efficiency
- Increase recycling and reduce waste
- Incorporate the use of clean vehicles and fuels
- Use environmentally-friendly building materials, maintenance products and landscaping practices
- Save Money

Since 2006, the Green Team has signed agreements with local professional sports teams, major real estate firms and developers, and colleges and universities to reduce the environmental impacts of their buildings and projects. So far, our partners include (follow the links to read the associated press releases):

- [DestinyUSA](#)
- [New York Mets](#)
- [Montclair State University](#)
- [St. John's University](#)
- [Cushman and Wakefield](#)
- [Monmouth University](#)
- [New Meadowlands Stadium \(New York Giants / New York Jets\)](#) | [Watch the Video](#) ▶
- [Raritan Valley Community College](#)

A future MOU is projected with a health care system encompassing 13 hospitals. If you contemplate a major development in the Region 2 area (New York, New Jersey, Puerto Rico, or the US Virgin Islands) and would like information on how to do this in a "green" way, please contact Andrew Bellina at 212-637-4126 or [GreenTeam.Region2@epa.gov](mailto:GreenTeam.Region2@epa.gov).

- [Read the Green Team agreements and updates.](#)
- [View a list of EPA's partnership programs.](#)

# New York Mets MOU Signing





# New York Mets MOU Highlights

- The use of 95% recycled steel
- A 15,000 sq. ft. green roof over the team offices and white roof
- Stormwater Run-off Reductions, including 30,000 sq. ft. of catch basins and planted areas as well as 65,000 sq. ft. of porous/permeable pavement
- Using over 2 million lbs. of CCPs in place of portland cement
- The use of Energy Conserving Lighting, HVAC systems and elevators that saves over 250 mw/yr and becoming an Energy Star Program member
- Water Conservation techniques including hands free faucets and waterless urinals that save over 5 mgal/yr and the use of on site wells for watering needs
- Reducing Waste generation and Increasing Solid Waste Recycling as well as joining the WasteWise Program
- Using low sulfur diesel fuel for construction equipment

# Montclair State University MOU Signing

## MSU Food Waste Composter



Increase in Composting under the MOU  
will Grow to an Estimated 40,000 lbs/yr  
that is Equivalent to almost  
21 MTCE of CO<sub>2</sub>





# Montclair State U. MOU Highlights

- MSU plans to develop an EMS that will provide the framework to ensure that green activities and sustainability will be integrated into all facility operations.
- MSU will join EPA's *WasteWise* program and develop MSW reduction and recycling plans and program goals.
- Food wastes are processed in an in-vessel aerobic digester after being mixed with wood chips. Under the MOU, the project will be expanded to service the entire campus and also include the use of compostable serviceware. This will equate to over 706 metric tons of carbon equivalents avoided which is equivalent to removing 129 cars from the road. The food waste compost will be used in landscaping projects on campus.
- MSU will increase the recycling of paper, cardboard, and cans/bottles that is expected to save over 80 metric tons of carbon equivalents
- The University will ensure that all E-waste will be recycled.
- MSU will join the Energy Star Program that includes benchmarking energy consumption, reducing energy usage by 10% and educating students and employees on energy conservation.

# CUSHMAN & WAKEFIELD GREEN MOU SIGNING





# Cushman & Wakefield MOU Highlights

- **Joining the EPA Energy Star Program and evaluating opportunities to conserve energy when selecting new corporation office spaces and beginning an energy efficiency pilot program.**
- **Decreasing energy consumption across the company's office and managed properties portfolio by 30 percent by 2012.**
- **Helping building owners conduct energy analyses under EPA's ENERGY STAR benchmarking.**
- **Encouraging its clients with data centers to participate in EPA's Data Center Data Collection Initiative to help develop an ENERGY STAR rating for data centers.**
- **Tracking water usage at properties the company manages using the EPA ENERGY STAR Portfolio Manager tool and promoting the use of water efficient fixtures and water conservation measures.**
- **Joining EPA's WasteWise partnership program, through which the company will conduct an assessment of waste reduction activities, document sustainable purchases, and provide an annual estimate on improvements in waste reduction and recycling.**

# NY GIANTS/NY JETS GREEN MOU SIGNING CEREMONY



Join us as the  
**New York Football Giants**  
and the  
**New York Jets**  
team up with the  
**U.S. Environmental Protection Agency**  
to announce the new stadium's sustainability programs  
and document their "go green" partnership.

**Monday, June 1, 2009**  
**11:00 a.m.**  
**New Meadowlands Stadium, Southwest Plaza**  
NEW MEADOWLANDS

RSVP to Lauren Jacobi by clicking here: [ljacobi@nmstadco.com](mailto:ljacobi@nmstadco.com).

Please see the attached map for directions and parking.

*Please note: The event will take place outdoors on a construction site, rain or shine.  
Please dress appropriately. Boots or sturdy shoes are highly recommended.*



**NEW  
MEADOWLANDS  
STADIUM**





# Giants/Jets MOU Highlights

- **Using some 40,000 tons of recycled steel to build the stadium and recycling 20,000 tons of steel when Giants Stadium is demolished;**
- **Installing seating made partially from recycled plastic and scrap iron;**
- **Building the stadium on a parcel of rehabilitated land, a former brownfield;**
- **Reducing air pollution from construction vehicles by using cleaner diesel fuel, diesel engine filters, and shortening how long engines idle;**
- **Using environmentally-friendly concrete in construction;**
- **Reducing water consumption and increasing energy efficiency;**
- **Providing mass transit options for fans; and**
- **Replacing concession plates, cups and cutlery with compostable alternatives**

# Stony Brook University Green MOU Signing





# **Stony Brook U. Hospital MOU Highlights**

- **Join EPA's ENERGY STAR program, which offers technical assistance for audits, benchmarking and reduction plans, and strive to reduce energy by 10 percent. Under the agreement, Stony Brook University Hospital will also conduct a campus-wide energy audit with the goal of increasing campus energy efficiency.**
- **Recycle some 180 tons of cardboard and 5 tons of bottles and cans each year.**
- **Join EPA's WasteWise program, which provides technical assistance for the development of waste reduction and recycling plans, as well as a goal to increase its recycling rate to at least 25%.**
- **Design all new facilities to meet the U.S. Green Building Council's LEED Silver standard.**



<http://www.epa.gov/region02/greenteam/>

